INDIANA DEPARTMENT of EDUCATION

# Indiana Department of Education K-8 STEM Certification Evaluation Rubric

**NOTE: Essential Elements are identified in gray.**

## Domain 1: Culture

| Element | Investigating<br>0 points | Initiating<br>1 point | Approaching<br>2 points | Innovating<br>3 points | Element Score | Evidenced By: |
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| **1.1 Decision-Making** | Does not yet meet minimum indicators for developing. | At least 50% of certified staff provides feedback to the STEM Leadership team comprised of administrators and teachers on the decision-making regarding planning and implementing the school's STEM program. | At least 75% of certified staff provides feedback to the STEM Leadership team comprised of administrators and teachers on the decision-making regarding planning and implementing the school's STEM program | At least 95% of certified staff provides feedback to the STEM Leadership team comprised of administrators and teachers on the decision-making regarding planning and implementing the school's STEM program | | **Required:**<br>•Roster of STEM team members identified by role (i.e., Admin, Teacher, STEM Coach, etc.)<br>•Mechanism for collecting STEM program feedback by certified staff<br>**Additional Evidence:**<br>•Meeting schedule<br>•Detailed meeting minutes<br>•Meeting agenda(s) |
| **1.2 Common Work Time** | Does not yet meet minimum indicators for developing. | Common work time is provided on a monthly basis where teachers in the STEM program plan integrated STEM learning opportunities as an interdisciplinary team. | Common work time is provided on a bi-weekly basis where teachers in the STEM program plan integrated STEM learning opportunities as an interdisciplinary team. | Common work time is provided on a weekly basis where teachers in the STEM program plan integrated STEM learning opportunities as an interdisciplinary team. | | **Required:**<br>•Artifacts generated during common work time including agendas and/or meeting minutes, integrated lesson plans, and roster of participants from each grade level or interdisciplinary team<br>•Meeting/master schedule highlighting interdisciplinary or team common work time<br>•Calendar of implementation of STEM Units/lessons |
| **1.3 Sustainability Plan** | Does not yet meet minimum indicators for developing. | There is a two-year STEM certification sustainability plan in place, including funding sources for both technology and STEM curriculum and training needs due to staff turnover. | There is a three-year STEM certification sustainability plan in place, identifying funding sources for both technology and STEM curriculum and training needs due to staff turnover. | There is a five-year STEM certification sustainability plan in place, identifying funding sources for both technology and STEM curriculum and training needs due to staff turnover. | | **Required:**<br>•Technology plan<br>•Curriculum funding plan<br>•Training plan<br>*(Documentation should include a plan to sustain programming/equipment/training for the 5-years of certification.)* |
| **1.4 Measurement of Student Attitude/Interest** | Does not yet meet minimum indicators for developing. | Informal methods are used to measure students' attitudes toward STEM and/or interest in STEM classes/career pathways, and the school's STEM program is revised, as needed, based upon analysis of this data. | Formal measurement of students' attitudes toward STEM and/or interest in STEM classes/career pathways are measured on an annual basis and the school's STEM program is revised, as needed, based upon analysis of this data. | Formal measurement of students' attitudes toward STEM and/or interest in STEM classes/career pathways are measured at least two times per school year and the school's STEM program is revised, as needed, based upon analysis of this data. | | **Required:**<br>•Example of survey used, such as Student Attitudes Toward STEM Survey (S-STEM), STEM Semantics Survey, Test of Science Related Attitudes (TOSRA) and/or a locally- created survey<br>•Analysis of each survey's data<br>•Detailed description of revisions based upon data analysis<br>•At least one full year of survey data<br>**Additional Evidence:**<br>•Career Interest Questionnaire |
| **1.5 STEM Program Engagement** | Does not yet meet minimum indicators for developing. | Schools actively engage stakeholders, including parents, educational leaders, and community partners in activities to reflect, grow, and promote the school's STEM program using two of the following activities:<br>1. Surveys<br>2. STEM-focused community forums<br>3. STEM community partner celebrations<br>4. STEM Professionals supporting classroom teachers with authentic STEM problem-solving<br>5. STEM career, community, or business presentations<br>6. STEM-focused press releases/newsletters<br>7. STEM-focused community/family nights | Schools actively engage stakeholders, including parents, educational leaders, and community partners in activities to reflect, grow, and promote the school's STEM program using three of the following activities:<br>1. Surveys<br>2. STEM-focused community forums<br>3. STEM community partner celebrations<br>4. STEM Professionals supporting classroom teachers with authentic STEM problem-solving<br>5. STEM career, community, or business presentations<br>6. STEM-focused press releases/newsletters<br>7. STEM-focused community/family nights | Schools actively engage stakeholders, including parents, educational leaders, and community partners in activities to reflect, grow, and promote the school's STEM program using five of the following activities:<br>1. Surveys<br>2. STEM-focused community forums<br>3. STEM community partner celebrations<br>4. STEM Professionals supporting classroom teachers with authentic STEM problem-solving<br>5. STEM career, community, or business presentations<br>6. STEM-focused press releases/newsletters<br>7. STEM-focused community/family nights | | **Based on the criteria the school chooses to fullfil this element, the following evidence is required:**<br>•Detailed documentation of STEM-focused events, including fliers, brochures, and other promotional materials<br>•Copy of survey, data analysis, and reflection based on results<br>•Calendar of community events<br>•Detailed volunteer schedule including dates and volunteer duties related to STEM<br>• Copy of STEM-focused press releases and/or newsletters<br>• Detailed meeting minutes from STEM- focused community forum<br>**Additional Evidence:**<br>•Pictures from events |
| **1.6 STEM Instructional Feedback and Support** | Does not yet meet minimum indicators for developing. | One of these indicators are documented:<br>1. Evaluation indicators have been determined through modification of a local evaluation tool or locally- developed STEM instructional walkthrough tool for identifying targeted STEM instructional practices.<br>2. All evaluators are trained in observing targeted STEM instructional practices using the local evaluation instrument.<br>3. Evaluators incorporate feedback on targeted STEM instructional practices in formative and summative evaluations using the local evaluation instrument.<br>4. Evidence that 75% of teachers recieve one of the following supports based on evaluator feedback is provided:<br>1. Peer observation<br>2. Lesson study<br>3. Critical feedback<br>4. Coaching<br>5. Modeling<br>6. Action research<br>7. Mentoring | Two of these indicators are documented:<br>1. Evaluation indicators have been determined through modification of a local evaluation tool or locally- developed STEM instructional walkthrough tool for identifying targeted STEM instructional practices.<br>2. All evaluators are trained in observing targeted STEM instructional practices using the local evaluation instrument.<br>3. Evaluators incorporate feedback on targeted STEM instructional practices in formative and summative evaluations using the local evaluation instrument.<br>4. Evidence that 75% of teachers recieve two of the following supports based on evaluator feedback is provided:<br>1. Peer observation<br>2. Lesson study<br>3. Critical feedback<br>4. Coaching<br>5. Modeling<br>6. Action research<br>7. Mentoring | All of these indicators are documented:<br>1. Evaluation indicators have been determined through modification of a local evaluation tool or locally- developed STEM instructional walkthrough tool for identifying targeted STEM instructional practices.<br>2. All evaluators are trained in observing targeted STEM instructional practices using the local evaluation instrument.<br>3. Evaluators incorporate feedback on targeted STEM instructional practices in formative and summative evaluations using the local evaluation instrument.<br>4. Evidence that 75% of teachers recieve three or more of the following supports based on evaluator feedback is provided:<br>1. Peer observation<br>2. Lesson study<br>3. Critical feedback<br>4. Coaching<br>5. Modeling<br>6. Action research<br>7. Mentoring | | **Required:**<br>•List of identified indicators targeting STEM instructional practices from local evaluation instrument or locally-developed STEM instructional walkthrough tool<br>•Documentation of training for evaluators with the evaluation document specific to STEM components<br>•Samples of actionable feedback provided to teachers using the local evaluation instrument that enhances curriculum and instruction<br>•Complete roster of certified staff members indicating supports provided and frequency of occurrence. |

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| **1.7 Access and Opportunity to STEM Courses and Programs** | Does not yet meet minimum indicators for developing. | Elementary: At least 50% of students participate in integrated STEM instruction/programming as part of core instruction.<br>Middle school: STEM elective enrollment is within 50% of school demographics. | Elementary: At least 75% of students participate in integrated STEM instruction/programming, other than related arts classes.<br>Middle school: STEM elective enrollment is within 25% of school demographics. | Elementary: 100% of students participate in integrated STEM instruction/programming, other than related arts classes.<br>Middle school: STEM elective enrollment mirrors school demographics. | | **Required:**<br>•Course offerings (MS)<br>•School schedule<br>•STEM enrollment data with comparison to overall student body data (e.g., special education status, gender, race, economically-disadvantaged, etc.)<br>•Schedule showing how STEM time is "protected" from pull-outs for special programming (e.g., Title I, Resource, Remediation, etc.)<br>**Additional Evidence:**<br>•Curriculum maps<br>•Middle school STEM programming promotion plan |
| **Culture Score:** | | | | | **0** | |

## Domain 2: Curriculum

| Element | Investigating<br>0 points | Initiating<br>1 point | Approaching<br>2 points | Innovating<br>3 points | Element Score | Evidenced By: |
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| **2.1 Curriculum Integration** | Does not yet meet minimum indicators for developing. | At least 25% of planned, integrated STEM curriculum is evidence-based and aligned to Indiana Academic Standards. | At least 50% of planned, integrated STEM curriculum is evidence- based and aligned to Indiana Academic Standards. | At least 75% of planned, integrated STEM curriculum is evidence-based and aligned to Indiana Academic Standards. | | **Required:**<br>•Description of model that is the basis for teacher-created units and/or other providers (e.g., 5-E, PBL Gold Standard, etc.) **OR**<br>•Research conducted to justify curriculum selection<br>•Sample of integrative lesson plans that align to Indiana Academic Standards |
| **2.2 Curriculum Implementation** | Does not yet meet minimum indicators for developing. | Integrated STEM curriculum has been implemented with fidelity for less than one school year. | Integrated STEM curriculum has been implemented with fidelty over the course of one full school year. | Integrated STEM curriculum has been implemented with fidelty over the course of two or more full school years. | | **Required:**<br>•Curriculum implementation plan<br>•Detailed timeline that highlights the implementation of the integrated STEM curriculum |
| **2.3 Computer Science** | Does not yet meet minimum indicators for developing. | A computer science implementation plan has been developed in compliance with IC 20-30-5-23. | Standards-based computer science content is incorporated into the school curriculum for at least 50% of students. | Standards-based computer science content is incorporated into the school curriculum for 100% of students. | | **Required:**<br>•Computer Science Implementation plan<br>•Course list/guide (MS)<br>•Course enrollment/completion data (MS)<br>**Additional Evidence:**<br>•Master schedule with protected time<br>•Curriculum map |
| **2.4 Employability Skills** | Does not yet meet minimum indicators for developing. | At least 50% of students receive integrated instruction on Employability Skills Standards, based upon the appropriate grade band. | At least 75% of students receive integrated instruction on Employability Skills Standards, based upon the appropriate grade band.. | At least 100% of students receive integrated instruction on Employability Skills Standards, based upon the appropriate grade band. | | **Required:**<br>•Curriculum maps/program summary<br>**Additional Evidence:**<br>•Samples of unit/lesson plans<br>•Samples of student products<br>•Samples of rubrics |
| **2.5 Access and Opportunity for All Learners** | Does not yet meet minimum indicators for developing. | General education teachers create STEM materials for diverse learners based upon their understanding of students' academic needs. | Special education and support services teachers (High Ability, English Learner, Interpreters, etc.) provide accommodations and/or adaptations of STEM materials for diverse learners based upon their understanding of students' academic needs. | General education teachers and appropriate special education/support service teachers (High Ability, English as a New Langauage, interpreters, etc.) collaboratively plan for necessary STEM material development and refinement for diverse learners based upon their understanding of students' academic needs. | | **Required:**<br>•Samples of collaborative lesson plans with planned supports<br>•Description of collaborative work<br>**Additional Evidence:**<br>•Meeting agenda(s)<br>•Guidance documents |
| **2.6 Assessments** | Does not yet meet minimum indicators for developing. | At least 25% of teachers use a variety of assessment methods, formal and informal, formative and summative, to monitor and evaluate STEM learning and instructional effectivness. | At least 50% of teachers use a variety of assessment methods, formal and informal, formative and summative, to monitor and evaluate STEM learning and instructional effectivness. | At least 75% of teachers use a variety of assessment methods, formal and informal, formative and summative, to monitor and evaluate STEM learning and instructional effectivness. | | **Required:**<br>•Samples of a variety of assessments<br>•Samples of feedback provided to students<br>•Samples of rubrics<br>•From each grade level served, provide samples of variety of assessments used in implemented STEM units (1.3)<br>**Additional Evidence:**<br>•Samples of student products |
| **Curriculum Score:** | | | | | **0** | |

## Domain 2: Instruction

| Element | Investigating<br>0 points | Initiating<br>1 point | Approaching<br>2 points | Innovating<br>3 points | Element Score | Evidenced By: |
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| **3.1 STEM Instructional Approach Training** | Does not yet meet minimum indicators for developing. | At least 25% of teachers have been involved in ongoing training in implementing an integrated STEM instructional approach in the context of solving a real-world problem or challenge with a focus on problem- based and inquiry-based learning training. | At least 50% of teachers have been involved in ongoing training in implementing an integrated STEM instructional approach in the context of solving a real-world problem or challenge with a focus on problem-based and inquiry-based learning training. | At least 75% of teachers have been involved in ongoing training in implementing an integrated STEM instructional approach in the context of solving a real-world problem or challenge with a focus on problem- based and inquiry-based learning training. | | **Required:**<br>•Summary/documentation of problem- based learning/inquiry-based learning/STEM integration training that has taken place<br>•Complete roster of certified staff members indicating specific training participation<br>**Additional Evidence:**<br>•Agenda(s) from professional development/training session(s)<br>(This element is about formal training.) |
| **3.2 STEM Instructional Approach Implementation** | Does not yet meet minimum indicators for developing. | At least 25% of teachers use a STEM instructional approach in the context of solving a real-world problem or challenge. | At least 50% of teachers use a STEM instructional approach in the context of solving a real-world problem or challenge. | At least 75% of teachers use a STEM instructional approach in the context of solving a real-world problem or challenge. | | **Required:**<br>•Samples of unit/lesson plans<br>•Curriculum maps<br>•List/calendar of teachers implementing problem-based learning/inquiry-based learning/STEM integration and frequency<br>**Additional Evidence:**<br>•Samples of student products |

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| **3.3 Student Instructional Work Groups** | Does not yet meet minimum indicators for developing. | At least two times per month and in at least 50% of classes, students work in groups as follows:<br>1. Students collaborate with peers based upon STEM project/intended outcomes.<br>2. Students actively question, brainstorm, utilize the design process to make decisions.<br>3. Each group member has at least one well-defined assigned role that is critical to successful project/goal completion.<br>4. Accountability is measured and recorded for each individual as well as the entire group. | At least one time per week and in at least 50% of classes, students work in groups as follows:<br>1. Students collaborate with peers based upon STEM project/intended outcomes.<br>2. Students actively question, brainstorm, utilize the design process to make decisions.<br>3. Each group member has at least one well-defined assigned role that is critical to successful project/goal completion.<br>4. Accountability is measured and recorded for each individual as well as the entire group. | At least two times per week and in at least 50% of classes, students work in groups as follows:<br>1. Students collaborate with peers based upon STEM project/intended outcomes.<br>2. Students actively question, brainstorm, utilize the design process to make decisions.<br>3. Each group member has at least one well-defined assigned role that is critical to successful project/goal completion.<br>4. Accountability is measured and recorded for each individual as well as the entire group. | | **Required:**<br>•Samples of unit/lesson plans/student planning documents<br>•Defined student roles/responsibilities plans<br>•Group and individual accountability plans<br>•Complete roster of certified staff members implementing STEM approach and frequency of group work<br>**Additional Evidence:**<br>•Group assignment processes<br>•Samples of rubrics<br>•Examples of student voice in roles |
| **3.4 Technology in Instruction** | Does not yet meet minimum indicators for developing. | In 25% of units in the implementation timeline, students use appropriate instructional technology equipment, materials, processes, and tools to engage in and enhance their STEM learning (e.g., data collection/analysis, design, creation, virtual simulations, research and communication). | In 50% of units in the implementation timeline, students use appropriate instructional technology equipment, materials, processes, and tools to engage in and enhance their STEM learning (e.g., data collection/analysis, design, creation, virtual simulations, research and communication). | In 75% of units in the implementation timeline, students use appropriate instructional technology equipment, materials, processes, and tools to engage in and enhance their STEM learning (e.g., data collection/analysis, design, creation, virtual simulations, research and communication). | | **Required:**<br>•Examples of technologies used<br>•Samples of student products<br>•Roster of technologies used and frequency-of-use<br>•Samples of how technology is used in lesson plans provided in 1.3/2.6<br>**Additional Evidence:**<br>•Samples of unit lessons/plans |
| **Instruction Score:** | | | | | **0** | |

| **Domain 4: Partnerships** | | | | | | |
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| **Element** | **Investigating**<br>**0 points** | **Initiating**<br>**1 point** | **Approaching**<br>**2 points** | **Innovating**<br>**3 points** | **Element Score** | **Evidenced By:** |
| **4.1 Community Partner Feedback** | Does not yet meet minimum indicators for developing. | A STEM Advisory Board is established consisting of at least one local STEM community partner who is actively engaged in the STEM program and provides feedback on the school's STEM program. | A STEM Advisory Board is established consisting of at least two local STEM community partners, from different sectors, who are actively engaged in the STEM program and provide feedback on the school's STEM program. | A STEM Advisory Board is established consisting of at least three local STEM community partners, from different sectors, who are actively engaged in the STEM program provide feedback on the school's STEM program. | | **Required:**<br>•Roster of STEM Advisory Board members<br>•STEM Community Partner planning feedback<br>•Summary of revisions made based on STEM Advisory Board feedback<br>**Additional Evidence:**<br>•Detailed meeting minutes<br>•Agenda(s)<br>•Roster of participants<br>•Copy of survey(s)<br>(This element is about program planning.) |
| **4.2 STEM Career Exploration** | Does not yet meet minimum indicators for developing. | At least 10% of STEM units have career exploration/information as a part of the curriculum. | At least 25% of STEM units have career exploration/information as a part of the curriculum. | At least 50% of STEM units have career exploration/information as a part of the curriculum. | | **Required:**<br>•Summary of career exploration/information section of curriculum<br>•Documentation of participation<br>**Additional Evidence:**<br>•Samples of unit/lesson plans<br>•Samples of student products |
| **4.3 Additional STEM Learning Opportunities** | Does not yet meet minimum indicators for developing. | Additional school STEM activities, such as robotics and engineering clubs, are available and accessible by at least 10% of students on a continuous basis, and participation mirrors school demographics. | Additional school STEM activities, such as robotics and engineering clubs, are available and accessible by at least 25% of students on a continuous basis, and participation mirrors school demographics. | Additional school STEM activities, such as robotics and engineering clubs, are available and accessible by at least 50% of students on a continuous basis, and participation mirrors school demographics. | | **Required:**<br>•Summary of opportunities<br>•Demographic summary of participants compared to school demographics<br>**Additional Evidence:**<br>•Calendar of events<br>•Transportation options<br>•Latchkey options |
| **4.4 Access and Opportunity to STEM Experiences** | Does not yet meet minimum indicators for developing. | Provides at least one opportunity/mode, with an action plan, to inspire and inform underrepresented student groups about careers in STEM fields. | Provides at least two opportunities/modes, with an action plan, to inspire and inform underrepresented student groups about careers in STEM fields. | Provides at least three opportunities/modes, with an action plan, to inspire and inform underrepresented students group about careers in STEM fields. | | **Required:**<br>•Summary of opportunities<br>• Identification of underrepresented student groups<br>•Action plan to inspire/inform identified under-represented students groups<br>•Interactions with STEM professionals from a of variety races, ethnic, and gender groups |
| **Partnerships Score:** | | | | | **0** | |

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| **Total Score** | **0 (out of 63)** |

| **Key Terminology** | | |
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| **Term** | **Definition** | **Resources** |
| Community Partners | Business, higher-education, community organizations. | Georgia STEM/STEAM Model |
| Computer Science | Computer science is defined by the content found in Indiana's Computer Science Standards. | IC 20-30-5-23 |
| Culture | The way teachers and other staff members work together and the set of beliefs, values, and assumptions they share. | WestED |

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| Curriculum Integration | The materials and pedagogical strategies used by multidisciplinary teams of teachers collaborate to plan and present related lessons that center around a central theme, issue or problem. | ConnectEd |
| Employability Skills Standards | Indiana's Employability Skills Standards allow student to be prepared for the ever-changing needs of today's workforce. The expectation is for students to work through the standards in multi-subject areas. As students move through grade levels, they will work with and experience the standards at those grade bands (K-2, 3-5, 6- 8, 9-10, and 11-12). The standards are based on the National Employability Skill Standards from the Office of Career, Technical, and Adult Education (OCTAE), the Indiana Department of Workforce Development's Employability Skills Benchmarks, the Governor's Work Ethic Certificate, and the Indiana Department of Education's Social-Emotional Learning Competencies. The standards are arranged within four key areas: Mindsets (M), Work Ethic (WE), Learning Strategies (LS), and Social and Emotional Skills (SE). | IDOE Resources |
| | | IC 20-30-5-14 |
| Inquiry-Based Instruction | A pedagogy that can be used to deliver daily lessons in primary disciplines and beyond. It begins | American Association for the Advancement of Science Resource |
| | with the teacher presenting the students with a question to explore or having students develop their own questions. As the students investigate the question, they give priority to evidence that is gathered through research and exploring to formulate explanations that describe their findings based on evidence or collected data. Students connect explanations to their knowledge and current understandings in the discipline and communicate and justify their explanations. | Indiana's Priorities for STEM Education |
| Problem-Based and/or Project-Based Learning (PBL) | A pedagogy that anchors the teaching of disciplinary content in the context of solving a real-world problem or challenge. | Ford NGL |
| | | PBLWorks |
| | | Magnify Learning |
| | | Indiana's Priorities for STEM Education |
| STEM Education | STEM education is the integration of the science, technology, engineering and math disciplines with the goal of deploying problem/inquiry-based approaches to teaching and learning in the classroom, while developing critical thinking skills and creating pathways to postsecondary and career opportunities. | Indiana's Priorities for STEM Education |
| STEM Instruction | The integration of the STEM disciplines with the goal of deploying problem/project/inquiry- based approaches to teaching and learning in the classroom, while developing critical thinking skills and creating pathways to postsecondary readiness and career opportunities. | Indiana's Priorities for STEM Education |
| | | NRC Resource |
| STEM Instructional Approach | Accepted STEM instructional approaches referenced in Indiana's Priorities for STEM Education Plan:<br>-Problem-based approaches<br>-Project-based approaches<br>-Inquiry-based approaches | Indiana's Priorities for STEM Education |
| Under-Represented Students | Females, racially and ethnically diverse populations, and students with disabilities. | NSF Report |